Bridges to Stem Cell Research, Therapy and Careers: A Talent Development Program for Training Diverse Undergraduates for Careers in Regenerative Medicine

Grant Award Details

Bridges to Stem Cell Research, Therapy and Careers: A Talent Development Program for Training Diverse Undergraduates for Careers in Regenerative Medicine

Grant Type: Bridges II

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Investigator:

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Institution:	Cal State Univ, Fullerton
Type:	PI

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Grant Application Details

Application Title: Bridges to Stem Cell Research, Therapy and Careers: A Talent Development Program for Training Diverse Undergraduates for Careers in Regenerative Medicine

Public Abstract:

Designed specifically for a highly diverse student population, BSCR2 is a talent development program, targeting both high-achieving and lower-performing undergraduates and providing training, support, high-impact practices and enrichment to help ensure participants' success in their research internships. Ten biology or biochemistry majors will be selected as BSCR2 scholars annually, for a total of 50.

The program has been configured to instill in scholars the ideal traits identified by the 2014 California Workforce Trends in the Life Science Industry talent report: knowledgeable about up-to-date information, possessing broad knowledge, aware of industry standards, understanding project management, possessing business acumen and knowledge about key components of R&D, having had hands-on training and team-based project-oriented learning experiences, having had multiple research experiences, having creativity and curiosity, and having basic research, presentation and written communication skills.

BSCR2 will consist of a 7-month training on the home campus, followed by a 12-month internship in a stem cell research lab at one of five internship-host institutions. All coursework can be applied toward the B.S. in biological science or a minor in cell and molecular biology and thus is fully integrated into B.S. degree programs.

The preparatory training on the home campus will consist of 1) five biology courses to strengthen the fundamentals scholars will need for their research internships, 2) a human stem cell techniques course designed specifically for BSCR2 and taught externally by an expert, 3) a hands-on research project in a faculty lab to impart basic knowledge of research lab operations, 4) a proseminar to prepare scholars for internships, 5) two options for patient engagement activities, 6) three workshops to broaden their horizons and soft skills, 7) a seminar series on drug development and healthcare careers and 8) community outreach and education.

The scholars will then engage in a full-time, year-long research internship, carrying out a project focused on development of human stem cell-based therapies at a partnering internship-host institution, under the direction of a research mentor. All five internship-host institutions have been awarded CIRM grants. Through the internships, scholars will gain additional project-specific technical skills as well as the conceptual underpinnings necessary to solve problems in a particular stem cell research area.

The overarching goal for BSCR2 will be to fulfill all of CIRM's objectives for Bridges 2.0. In the process it will create a cadre of diverse, highly capable interns who have the knowledge, proficiency and desire to contribute to the development of stem cell-based therapies and go on to advanced degrees and careers in related fields.

Statement of Benefit to California:

California's role as an engine of biotech innovation has generated scores of opportunities, and the role of CIRM and stem cell biology in this boom is indisputable. The state has become a world leader in regenerative medicine, spawning new companies and creating high-quality jobs that require qualified people to fill them.

BSCR2 will help address multiple aspects of the boom in stem cell research and discovery in California. Among the most significant, it will help close the gap between job openings and qualified staff by training 50 undergraduate biology and biochemistry majors in stem cell techniques over five years and giving them hands-on experience conducting research in a lab. Many of these students will be underrepresented, expanding the diversity of the employee pool for their future employers and enabling the students to serve as role models for members of their families and communities. This, in turn, is likely to increase the number of stem cell investigators and support staff in the workforce pipeline for the future, and having qualified employees will increase productivity in California's stem cell-based companies. In time, this is likely to lead to the translation of discoveries into new therapeutics and diagnostics, benefiting Californians as well as people around the world.

Successful stem cell-based companies, staffed by highly qualified scientists and technicians, will also contribute tax revenue to the state.

Moreover, many of our students go on to complete doctorate and professional degrees; some of the students who took part in our initial BSCR program are already pursuing advanced degrees. This is of benefit to our state because these researchers will be able to bring diversity of thought, opinion, beliefs and problem-solving skills to the rapidly growing stem cell research enterprise.

In addition, the outreach component of BSCR2, targeting large numbers of students who are not majoring in the life sciences, as well as members of the community, will give them the scientific background to understand stem cells and their potential as well as the societal impacts of regenerative medicine. This component of the program will help to develop an informed citizenry with appropriate expectations of regenerative medicine and maintain public support for stem cell research within California. Historically, over 70% of students from this campus remain in California, which means much of the workforce talent will be retained locally, and the citizenry in the state will be informed.

Thus, BSCR2 is likely to create a well-prepared workforce pipeline and benefit the state by increasing productivity and maintaining California as a world leader in stem cell research and its translation into useful therapies in regenerative medicine.

Source URL: https://www.cirm.ca.gov/our-progress/awards/bridges-stem-cell-research-therapy-and-careers-talent-development-program